

Small Signal Fast Switching Diodes



FEATURES

- Silicon epitaxial planar diode
- Electrically equivalent diodes:
1N4148 - 1N914
- Material categorization:
For definitions of compliance please see
www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE

APPLICATIONS

- Extreme fast switches

MECHANICAL DATA

Case: DO-35

Weight: approx. 105 mg

Cathode band color: black

Packaging codes/options:

TR/10K per 13" reel (52 mm tape), 50K/box

TAP/10K per ammpack (52 mm tape), 50K/box

PARTS TABLE

| PART | ORDERING CODE | TYPE MARKING | INTERNAL CONSTRUCTION | REMARKS |
|--------|-------------------------|--------------|-----------------------|-----------------------|
| 1N4148 | 1N4148-TAP or 1N4148-TR | V4148 | Single diode | Tape and reel/ammpack |

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---------------------------------|---|-------------|-------|------|
| Repetitive peak reverse voltage | | V_{RRM} | 100 | V |
| Reverse voltage | | V_R | 75 | V |
| Peak forward surge current | $t_p = 1 \mu\text{s}$ | I_{FSM} | 2 | A |
| Repetitive peak forward current | | I_{FRM} | 500 | mA |
| Forward continuous current | | I_F | 300 | mA |
| Average forward current | $V_R = 0$ | $I_{F(AV)}$ | 150 | mA |
| Power dissipation | $l = 4 \text{ mm}, T_L = 45^{\circ}\text{C}$ | P_{tot} | 440 | mW |
| | $l = 4 \text{ mm}, T_L \leq 25^{\circ}\text{C}$ | P_{tot} | 500 | mW |

THERMAL CHARACTERISTICS ($T_{amb} = 25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|--|---|------------|---------------|--------------------|
| Thermal resistance junction to ambient air | $l = 4 \text{ mm}, T_L = \text{constant}$ | R_{thJA} | 350 | K/W |
| Junction temperature | | T_j | 175 | $^{\circ}\text{C}$ |
| Storage temperature range | | T_{stg} | - 65 to + 150 | $^{\circ}\text{C}$ |

| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|--|--|------------|------|------|------|---------------|
| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Forward voltage | $I_F = 10\text{ mA}$ | V_F | | | 1000 | mV |
| Reverse current | $V_R = 20\text{ V}$ | I_R | | | 25 | nA |
| | $V_R = 20\text{ V}, T_J = 150\text{ }^{\circ}\text{C}$ | I_R | | | 50 | μA |
| | $V_R = 75\text{ V}$ | I_R | | | 5 | μA |
| Breakdown voltage | $I_R = 100\text{ }\mu\text{A}, t_p/T = 0.01,$ $t_p = 0.3\text{ ms}$ | $V_{(BR)}$ | 100 | | | V |
| Diode capacitance | $V_R = 0\text{ V}, f = 1\text{ MHz},$ $V_{HF} = 50\text{ mV}$ | C_D | | | 4 | pF |
| Rectification efficiency | $V_{HF} = 2\text{ V}, f = 100\text{ MHz}$ | η_r | 45 | | | % |
| Reverse recovery time | $I_F = I_R = 10\text{ mA},$ $i_R = 1\text{ mA}$ | t_{rr} | | | 8 | ns |
| | $I_F = 10\text{ mA}, V_R = 6\text{ V},$ $i_R = 0.1 \times I_R, R_L = 100\text{ }\Omega$ | t_{rr} | | | 4 | ns |

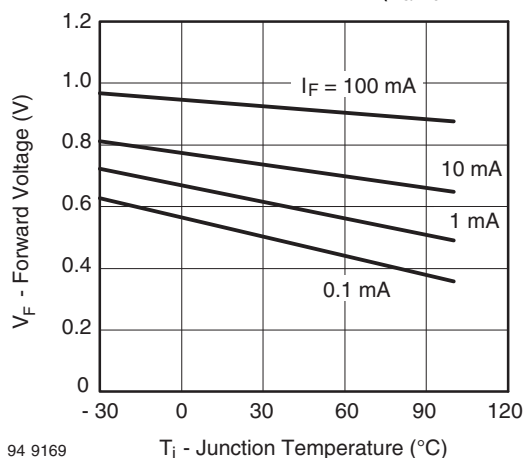
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Voltage vs. Junction Temperature

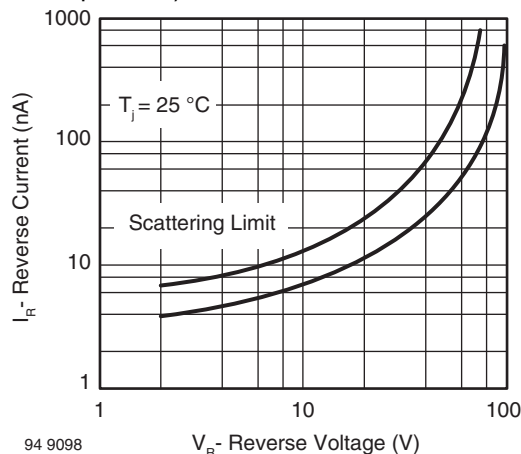


Fig. 3 - Reverse Current vs. Reverse Voltage

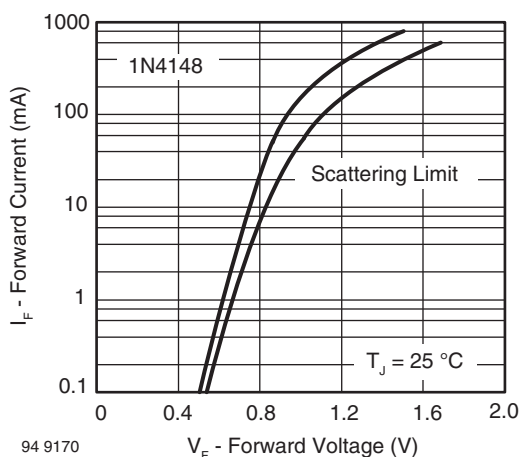
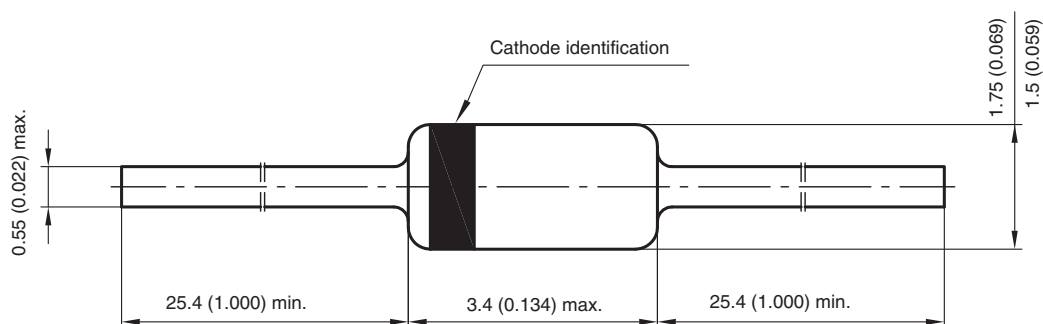


Fig. 2 - Forward Current vs. Forward Voltage



PACKAGE DIMENSIONS in millimeters (inches): **DO-35_02**



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